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| EXAMINER |
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GORDON, BRIAN R

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| ART UNIT | PAPER NUMBER |
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1743

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/827,570

Applicant(s)

HUBBARD ET AL.

Examiner

Brian R. Gordon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 and 17 is/are allowed.
- 6) ☒ Claim(s) 1,3,6,7 and 9-14 is/are rejected.
- 7) ☒ Claim(s) 2,4,5 and 8 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4-5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 8, line 16, it appears as if reference numeral 33 should follow the word "material" rather than "friction".

Reference numerals 2, 11, and 12 have all been used to represent the same element, the cartridges.

Appropriate correction is required.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "2", "11", and "13" have all been used to designate "the cartridges". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 8 and 14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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3. Claim 8 recites the limitation "said liquid detecting means" in line 2. There is insufficient antecedent basis for this limitation in the claim.
4. Claims 14-15 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: In claim 14 applicant states that the cartridge are separated using a multifunctional head. The multifunctional head has not been clearly claimed as an element of the invention and hence not considered an element of the invention. The claim is considered moreso a process claim of how the cartridges are separated. Claim 15 is also a process claim that describes a step that is performed by the multifunctional head that has not been claimed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 3, 6-7, 10-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Bloecker et al. US 6,592,826.

Bloecker et al. disclose in a vacuum chamber, which has at least two vacuum regions, substances, especially fluids, are transported in a directed manner from one region into the other region by the application of a suitable vacuum (pneumatic means).

The vacuum chamber consists of a cover and a lower part, the lower part of the vacuum chamber having a shoulder for receiving the lower filter support. In addition, recesses for the gripper of the robot are provided in the side walls of the chamber in order that the filter plates or filter supports can be inserted and removed automatically.

In a preferred embodiment, the filter supports have N pipe-shaped individual filters (N being especially 96) that are connected to form a filter support. The same applies to the collector support.

In addition, there are mounted on the corresponding four corner pies of the two filter supports, or of the filter support and the collector support, spacer sleeves which, in addition to their function of defining the first vacuum region, also effect the vertical correction of misplacements of the lower filter support by engaging in centering shafts in the vacuum lower part. The spacer sleeves preferably have a partially cylindrical shape in order to allow the vacuum to act on the corner pies. In addition, the spacer sleeves can be bevelled so that an additional centering of the filter supports is achieved during insertion. A filter support may be in one piece consisting of a large number of filter elements or it may be composed of a large number of individual filter elements.

The length of the spacer sleeves is preferably so selected that the outlet tips of the upper filter support are located inside the pipes of the lower filter support or collector support (being separable from each other), so that a controlled transport of the fluid

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through pipes or elements that correspond to one another is achieved. The outlet tips of the elements of the upper filter support are preferably located 1.5 mm inside the corresponding pipes of the filter elements or collecting elements of the corresponding lower support. As a result, contamination of non-corresponding elements is avoided.

FIG. 7 shows the lower and upper filter supports, F1 (monolithic liquid storage handling substrate), F2 (liquid handling substrate with plurality of channels) arranged one above the other in the lower part 1 of the vacuum chamber V, the outlet tips 80 of the individual filter elements 81 (may be considered as reservoir area), which here are constructed in the form of pipes, of the lower filter support F2 projecting into the lower vacuum region VU of the vacuum chamber V. The outlet tips 82 (dispensing device) of the filter elements 83 (cartridges) of the upper filter support F2 project into the upper pipe region of the filter elements 81 of the lower filter supports F2. The upper vacuum region VO is defined by suitable selection of the spacer sleeves 60 that are positioned on the lower filter support F2. Also shown is the cover 30 before it is placed onto the lower part 1, the lower part 1 having in its sealing surface 14 a groove 15 with a rubber seal 16 which effects a seal with respect to the seal 42 of the sealing surface 36 of the upper part 30. The upper filter support F1 effects a seal with respect to the seal 44 of the upper part 30. In FIG. 7, the two filter supports F1 and F2 can again be seen at the side. The filter supports F1 and F2, which consist of the filter elements 81, 83, may be constructed in one piece. It is also possible, however, for a filter support F1, F2 to be constructed as it were in modular form, for example by assembling individual filter elements 81 or 83 by means of suitable connections. The filter supports F1, F2 also

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have side walls 84. The lower filter support F2 is seated on the seal 43 of the ledge 5 of the lower part 1 of the vacuum chamber and thus forms the lower vacuum region VU, which is vented or evacuated via the suction shaft 7. The upper vacuum VO is formed by the suction shaft 8. Furthermore, the grip recesses 31, 32 and 17 (indexing marks) for the robot grippers are shown by way of example. The grip recesses 31, 32, 17 are open towards the top by way of a bevel (registration marks) in order to obtain better access for the robot (multifunctional head). In their base region they have a groove so that the robot gripper can be braced in the recesses 31, 32, 17.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bloecker et al. US 6,592,826.

Bloecker et al. disclose that the vacuum chamber is advantageously manufactured from plexiglass or some other transparent plastics material. For industrial production, the vacuum chamber may consist of a cast plastics material, which allows economical manufacture. Injection-moulding processes and milling processes may also be used to produce the 96 channel arrangement. While is not specifically recited that the device comprises 1536 channels, it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize that the any number of channels may ^{be} ~~be~~ manufactured by the process in order to allow of a higher through put of DNA samples in the filtration device.

Allowable Subject Matter

11. Claims 16-17 are allowed.

12. Claims 2, 4, and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 8 and 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach nor fairly suggest a dispensing device comprising a microelectro mechanical system (MEMS) comprising a membrane with a hole, a nozzle positioned adjacent to said hole on a side of said membrane and a piezoelectric element, cartridges that include an electrical conductor for supplying electrical energy to said liquid detecting means and said liquid storage and dispensing substrate, a liquid detecting system comprising a light emitting diode and a photo-detector.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Peck et al., Jacobs et al., Horine et al, Gora, Kumar et al., Bigus, Carl, Bevirt et al., Bova et al., Huinicke-Smith et al., Yao, Aoki and Bennett et al. disclose fluid transfer devices.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is (703) 305-0399 (571-272-1278 after December 18, 2003). The examiner can normally be reached on M-F, with 2nd and 4th F off.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 703-308-4037 (571-272-1267 after

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December 18, 2003). The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

brg


Jill Warden
Supervisory Patent Examiner
Technology Center 1700